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Reviews various studies and confirms assertion that usual criteria of admission, i.e., tests, school recommendations, and class rank, are biased in favor of students with "convergent" intellectual ability and discriminate against those with "divergent" intellectual and social interests, who may prove to be more creative. Recommends that college selection procedures make provision not only for the superior convergent student but also for the superior divergent student.

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The Coming Crises in the Selection of Students for College Entrance
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Non-IQ Intellectual and Other Factors in College Admission

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Let me say at once that I myself have not done any systematic work on the problem of college selection, and indeed have had no experience in this area at first hand. But if a very small sampling of high school counselors and college admissions officers is to be trusted, the following seem to be the most common objective criteria (as they say) applied either singly or in combination to the prospective college students:

1. Local or nationally standardized achievement tests of say the National Merit Scholarship type.
2. Learning aptitude instruments of various sorts based on the intelligence test concept.
3. School recommendations based on teacher evaluations of student characteristics.
4. Cumulative high school ranks based on teacher grades.

Now just to raise the argument, my thesis this morning will be—if I may for the sake of sharpening the issues overstate the case somewhat—that all of these measures are biased in favor of the student with what Guilford calls "convergent intellectual ability" as against the student with "divergent intellectual ability." That is, these indices favor the student who is retentive and docile—the one who tends to seek the single, pre-determined, "correct" answer to an intellectual problem—as against the student who is constructive and creative—the one who tends to seek the multiple, experimental, "novel" answer to an intellectual problem. (I need hardly say here that I do not conceive of the one as a "good guy" and the other as a "bad guy" or that the two are inevitably opposed to each other, but I do believe it is useful for analytic purposes to distinguish between these intellectual orientations.)

I myself have little doubt—although my friends with greater experience in the field tend to differ from me—that by and large these latter students (that is, the divergent ones) manage to slip through into college today despite these criteria. But if, as has been suggested, place in college does indeed become more and more scarce, and these same criteria are necesarily applied with greater and greater severity, it is these students who are in greatest danger of being left out, or being forced into less favorable institutions. And it is of course these creative people whom we can least afford *not* to give the very best we have to offer in education.

Accordingly, I should like—if I may say again, just to raise the argument here—to examine the several criteria of selection from the point of view of the bias I have mentioned, that is, the bias in favor of convergent as against divergent intellectual ability.

We may begin with the nature of the current standardized achievement tests. It will be recalled that we have made the distinction between the student who has a "set" toward the single, pre-determined, safe, "correct" solution as against the student who has a "set" toward the multiple, experimental, risky, "novel" solution. That is, the difference between the student who says, for example, about

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language that "it is a form or manner of expression"—an eminently safe and correct formulation that might easily have come from Webster; and the student who says that "language is the window through which we see experience"—a formulation that is quite something else again. I must confess that although I do not by any means undervalue the precision and good common sense of the first type of student, I find the second type of student rather scarcer and surely no less valuable or attractive.

Imagine then my surprise to discover that the vast preponderance of problems on current college selection tests are of the multiple-choice variety prohibiting the possibility of the creative kind of formulation but requiring only that the student be able to match his solution to a pre-determined single correct and sometimes quite pedestrian answer. Under these test conditions, which demand only skill in picking commonly accepted responses to questions—conditions, if one stops to think of it, that in many cases do not demand even recall, to say nothing of intellectual construction or creation, but only recognition—the student with the set toward what has been called convergent thinking, that is, with a preference for the pre-determined solution, is clearly at an advantage over the student with the set toward divergent thinking, that is, with a preference for the emergent solution.

Professor Banesh Hoffmann, in a recent paper entitled: "'Best Answers' or Better Minds"[1] analyzed this dilemma of the "better mind" in attempting to cope with the pre-determined "best answers" of current college selection tests. It is, I believe, a statement deserving careful attention on the part of people concerned with college selection, and it serves as the major reference for this section of my remarks. He points by way of an example to such defective item as:

Emperor is the name of—
(A) a string quartet
(B) a piano concerto
(C) a violin sonata

"This," he says, "seems a simple straightforward question. The average student quickly picks answer B and proceeds untroubled to the next question, perhaps pretty elated at being given so simple a test. But what of the superior student? He knows of the Emperor Concerto by Beethoven, but he also knows of the Emperor Quartet by Haydn, and his knowledge puts him at a disadvantage because he must pause to weigh the relative merits of A and B, while his more fortunate, less-informed competitor rushes ahead."[2]

But one need not choose defective items to make the point. Assume only a wary student coping with the following item—incidentally a bona fide item from a current college test manual:

The American colonies were separate and . . . entities, each having its own government and being entirely . . .
(A) incomplete - revolutionary
(B) independent - interrelated
(C) unified - competitive
(D) growing - organized
(E) distinct - independent

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[1] Banesh Hoffmann. "'Best Answers' or Better Minds." *The American Scholar*, 28 (Spring, 1959) 195-202.
[2] *Ibid.*, pp. 195-196.

Which of the multiple-choice pairs best fits the blanks? The immediate response seems to be E, "distinct" and "independent." But a moment's consideration shows that these additions are just cliches—and redundant besides. If the colonies were separate, there is no need to add the synonym "distinct," and if each had its own government, there is no need to add the synonym "independent"—unless one prefers to deal in cliches. So not unreasonably E is discarded, and another choice sought. A and B seem clearly inappropriate. To say the colonies were separate and "incomplete," or each colony was entirely "interrelated" does not make sense. What then about C? Well, not too bad. But it doesn't sound quite right. It must then be D—at least it is not redundant or a cliche. But it too has certain shortcomings. The word "entirely" spoils it. But then the word "entirely" spoils all the answers—the Colonies were not really *entirely* anything.

And so the conclusion for the student is that there is no exactly correct answer. But, as Professor Hoffmann says, this does not release him from making a specific choice—on this kind of test there is always a pre-determined *best* answer even though there are manifestly no really *good* answers. And there is no opportunity for the student to explain the reason for the answer he does give.

Professor Hoffmann states that as a matter of fact the prescribed correct answer is E—the redundant-cliche one. And he goes on to report a little experiment in which he gave the item to his colleagues in history, sociology, and English at Queens College and found that by and large they tended to choose D over E as the "best answer." On the basis of this analysis, he concludes:

> Even if the tests were constructed with impeccable draftsmanship and were free from all ambiguities and errors, they would, in my opinion, still have serious defects as testing instruments, especially when applied to creative persons and to some of the people who, despite impressive gifts, do not shine at parlor games. For by their very nature, these tests tend to favor the pickers of choices over the doers, and the superficially brilliant over the creatively profound.[3]

Now I need hardly say that I do not join in this blanket indictment of the multiple-choice type test. For certain purposes the multiple-choice item with a pre-determined one best answer is exactly right. But not for all purposes—and perhaps not even for most. The virtually exclusive dependence on this type of test in college selection is surely open to re-examination, for, as I have tried to suggest, it may frequently serve only to "select in" the student with convergent intellectual ability and to "select out" the student with divergent intellectual ability.

It is claimed by some that concern with the excessive use of the multiple-choice type achievement test is unwarranted since the presumption is that a measure of the student's more "constructive" intellectual abilities will be obtained by the intelligence-test type instruments. But if there is any one thing that recent studies of creativity and of creative individuals have been demonstrating, it is that the conventional IQ measure is not the only or, for that matter by itself, even a good index of creative or divergent thinking.

Recall for a moment two salient characteristics of the conventional intelligence test: (1) there is again almost always a single pre-determined correct response to any given item, and (2) the speed of response is almost always a crucial factor in the student's score. Now consider as a specific instance the vocabulary section of the average test. A word say like "bolt" is given, and if the respondent says

[3] *Ibid.*, p. 200.

"to lock" within a time period, he receives maximum credit. But what about the difference between the respondent who can say to the word "bolt" only "to lock," "to close," "to bar," or some cognate—that is, the respondent who converges upon only a single concept of "bolt"—and the respondent who can give besides "to lock," "to close," or "to bar" such meanings as "to gulp food rapidly," "to run off suddenly like a frightened horse," "a bolt of lightning," "a bolt of cloth," and so on—that is, the respondent who can—if he were given the opportunity—meaningfully diverge from one concept of "bolt" to another? The conventional intelligence test makes no or little provision for this person, and makes no distinction between him and the other. Indeed, he is often penalized since he must pause to guess which *one* of the several responses available to him is the one the examiner wants. And what is true of our vocabulary example is true of other elements of the conventional IQ or scholastic aptitude metric as well.

Considerations of this sort have led to attempts to conceive of intellectual functioning and testing in terms other than those underlying the traditional IQ metric, and more especially to current theoretical and empirical work in the area of creativity. This is not the place to review the relevant studies of Guilford, Roe, Cattell, Stein, Taylor, Barron, among others. Perhaps the best single source is the series of biennial Research Conferences on the Identification of Creative Scientific Talent at the University of Utah, the *Proceedings*[4] of the latest Conference containing two papers particularly pertinent to our present argument. I should like to cite these here, if I may, however briefly.

Getzels and Jackson[5] adapted from Guilford and Cattell, or constructed especially for the experiment a battery of creativity measures. The battery was administered to 449 students comprising the entire population of a Midwestern private secondary school, and on the basis of their Binet scores and their mean score on the creativity instruments, two experimental groups were formed. One group, called the High Creativity Group, included those subjects at the top 20 per cent on the creativity measures but below the top 20 per cent in IQ; the other group, called the High Intelligence Group, included those subjects at the top 20 per cent in IQ but below the top 20 per cent on the creativity measures. The single pertinent question in the present context was: What is the nature of the school performance of the two groups, that is, of students who do well on intelligence-type tests but not on creativity measures, and of students who do well on creativity measures but not on intelligence-type tests?

The results were straightforward and striking. The IQ for the population as a whole was 132, and the mean score for the combined numerical and verbal achievement tests was 49.9. The IQ of the High Intelligence Group was 150, and their achievement, as might be expected, was significantly higher than that of the population—actually, it was 55.

What now about the High Creativity Group? Their mean IQ was 127. Their mean achievement score was 56, also significantly higher than the population—and this despite their significantly lower IQ.

But note—and this is the point we are driving at—that on the basis of intelligence test performance these students would not have been identified as

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[4] *The Third (1959) University of Utah Research Conference on the Identification of Creative Scientific Talent.* Edited by Calvin W. Taylor, University of Utah Press, 1959. 334 pp.

[5] "The Highly Intelligent and the Highly Creative Adolescent: A Summary of Some Research Findings." *Ibid.*, pp. 46-57.

potentially superior scholastic achievers. Indeed, this group is likely to be thought of as *over-achievers,* since they apparently refused to perform down to the level deemed appropriate for them by the ubiquitous IQ test. Indeed, in at least one school I know they might even be sent for counseling as unseemly strivers.

In any case, the point we would make is that if an intelligence-type instrument were used as part of the college admission criteria for these students, the highly intelligent group rather than the highly creative group would be selected—and once again the individual with convergent intellectual ability would be favored over the individual with divergent intellectual ability.

The design of the preceding study was replicated by Torrance[6] using samples of younger subjects, and he reports essentially the same results. Although there was a difference of 25.6 IQ points on the Wechsler Intelligence Scale for Children between his highly intelligent group and his highly creative group, he reports that there were no statistically significant differences in achievement.

In addition, he determined the extent to which a group of gifted subjects identified on the basis of traditional IQ measures would include gifted children identified by the measures of creativity. He used the Wechsler, the Otis, the California Test of Mental Maturity, and the Metropolitan Test of Readiness with several hundred subjects. His conclusion is noteworthy: "No matter what IQ measure is used, we would exclude about 70 per cent of our most creative children, if IQ alone were used in identifying giftedness."[7]

We may now proceed briefly to the third of our college selection criteria, that is, to the nature of school recommendations as reflected in the teachers' evalution of pupil characteristics. The data are from the preceding two studies. Getzels and Jackson asked all the teachers in the experimental school to rate all their students "on the degree to which they liked having them in the class." The ratings given the Highly Intelligent Group and the ratings given the Highly Creative Group were compared to the ratings given the population as a whole. The mean of the Highly Intelligent Group was significantly higher than that of the population, the mean of the Highly Creative Group was not—this despite the fact that the two groups were equally superior to the population in achievement. The "good" convergent student is again favored over the "good" divergent student, and on this criterion too he would more likely be selected for college.

The same results are reported by Torrance. He states, "Two of the most consistent findings are for the high IQ pupils to be better known by their teachers and to be considered as more desirable as pupils than the highly creative subjects. In general, the high IQ, lower creativity pupils tend to be more highly preferred by teachers than those high on *both* IQ and creativity."[8]

Support for these findings of higher teacher preference for non-creative students comes from another type of study.[9] John L. Holland of the National Merit Scholarship Corporation compared the ratings of teachers with a variety of personality, achievement, and background characteristics of 783 boys and 394 girls

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[6] "Explorations in Creative Thinking in the Early School Years: A Progress Report." *Ibid.,* pp. 58-71.

[7] *Ibid.,* p. 66.

[8] *Ibid.,* p. 66.

[9] John L. Holland. "Some Limitations of Teacher Ratings as Predictors of Creativity." *Journal of Educational Psychology,* 50 (October, 1959) 219-223.

who were finalists in the 1958 National Merit Scholarship program. He concludes: "Only a limited reliance on teacher ratings as predictors of creativity appears desirable, since teachers seem to prefer students whose potential for creative activity, as measured by tests at least, is less than that of students rated low."[10]

Finally, we may turn to the last of the criteria we set out to examine from our particular point of view, that is, to the nature of the scholastic grades teachers give. We may take our data for analysis from a dissertation completed in the Department of Education at the University of Chicago by Haron Battle.[11] Battle administered to pupils in a suburb of Chicago standard achievement tests. In addition he administered to the pupils and to their teachers an attitude and values questionnaire. Using appropriate controls for achievement on the standard tests, he divided the pupils into two groups: one group included those students whose attitude and value profile was *congruent* with their teacher's attitude and value profile; the other group included those students whose attitude and value profile was *incongruent* with their teacher's attitude and value profile. He examined the grades the teachers had given the students in the two groups—and remember both groups had scored equally on the standard achievement measures. He found that the teacher grades of the congruent group were *higher* than those of the incongruent group. Again the student who converges upon socially accepted responses is favored over the student who diverges from them.

Let me say just a word by way of summarizing my argument. I have surely not intended to imply that the four criteria I have been examining critically are not the best we have today. They may very well be. But to say they are the best we have, is not to say they are very good, or that they ought to be applied mechanically and exclusively.

Despite recent studies by Dean George B. Smith[12] of the University of Kansas showing that if the bottom half of the entering class of freshmen had been excluded on the basis of entrance tests, the graduating class would have lost seven doctors, seven pharmacists, seven lawyers, 22 engineers, 40 teachers, five journalists, and 96 graduates of liberal arts and business—21 per cent of the graduating class—that despite this—I would support those who claim that these criteria with all their shortcomings tend pretty well to "select in" most of those with good convergent intellectual abilities.

But it is not our convergent students who concern me. What gives me pause is that the tests seem to be stacked against the student with divergent intellectual, and I might as well add social, talent. And what gives me even greater pause is that as the crisis in college admission becomes more severe, we may drift unwittingly from our concept of selecting the college student individually as *Man* into a concept of selecting the college student mechanically as *Manpower*. It is the convergent individual who is the most ready source of manpower, the divergent individual the best hope of Man. It is in this sense that I venture a plea here for making provision in our college selection procedures not only for the superior convergent student but for the superior divergent student as well.

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[10] *Ibid.*, p. 223.

[11] Haron J. Battle. *Application of Inverted Analysis in a Study of the Relation Between Values and Achievement of High School Pupils.* Unpublished Ph.D. Dissertation, University of Chicago, 1954.

[12] George B. Smith. "Who Would Be Eliminated." *Kansas Studies in Education,* Vol. 7, No. 1, December, 1956.